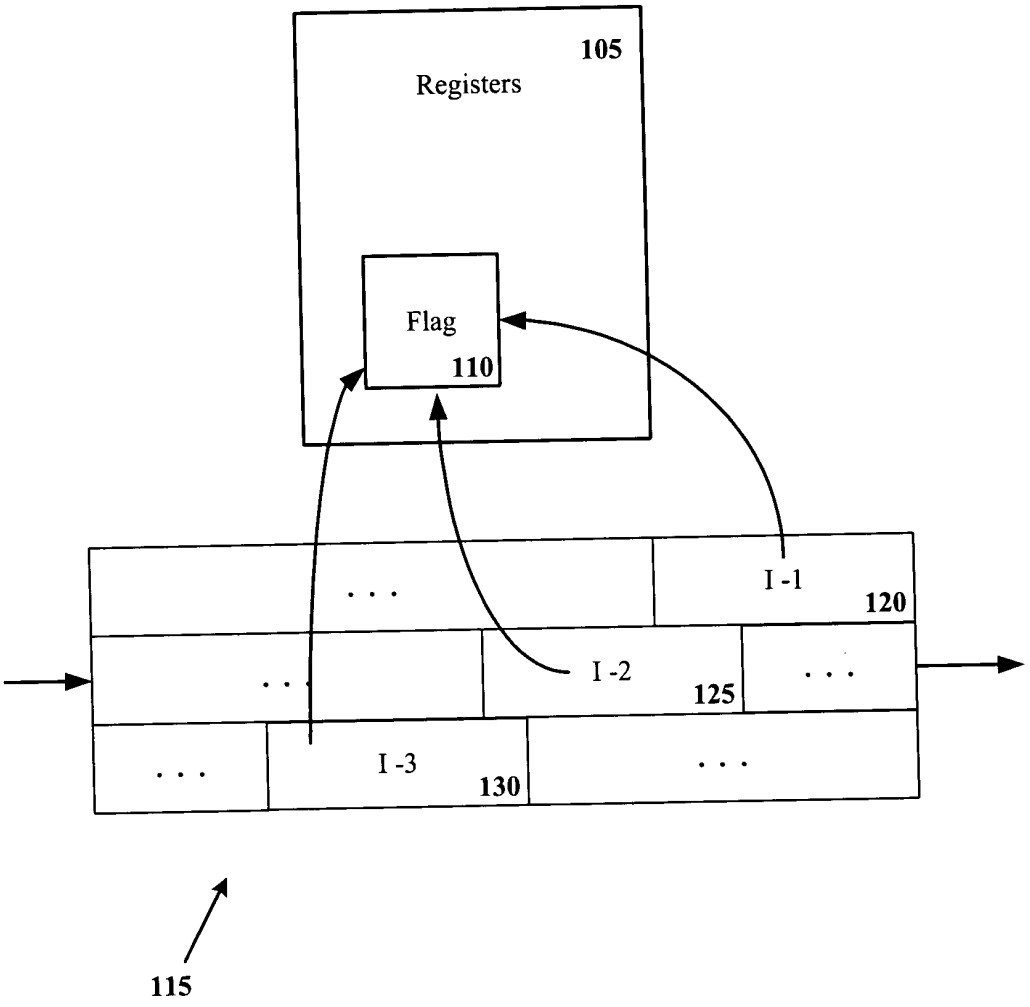

Figure 1

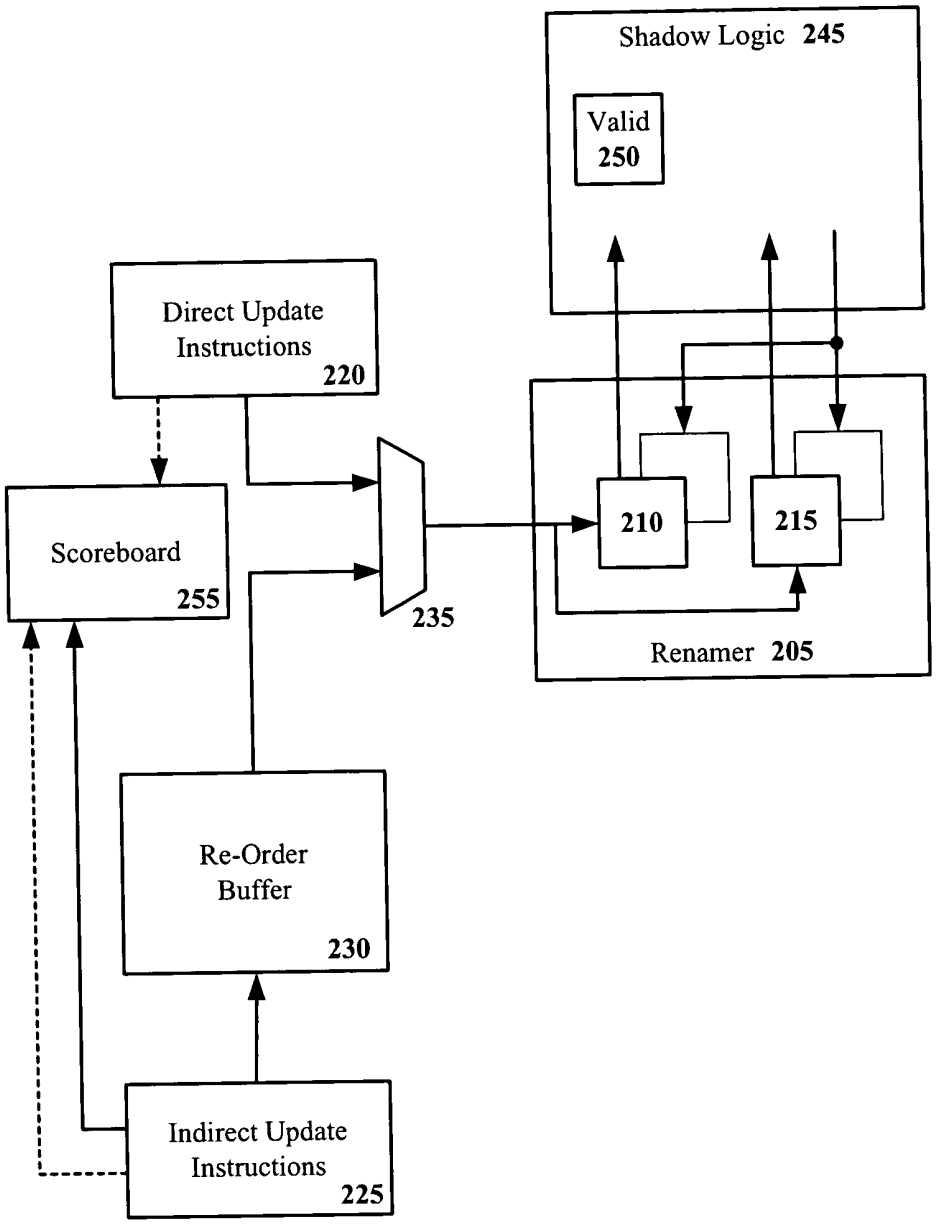
Shadow Logic 245
Valid 250
Direct Update Instructions 220
Scoreboard 255
235
210
215
Renamer 205
Re-Order Buffer 230
Indirect Update Instructions 225

Figure 2

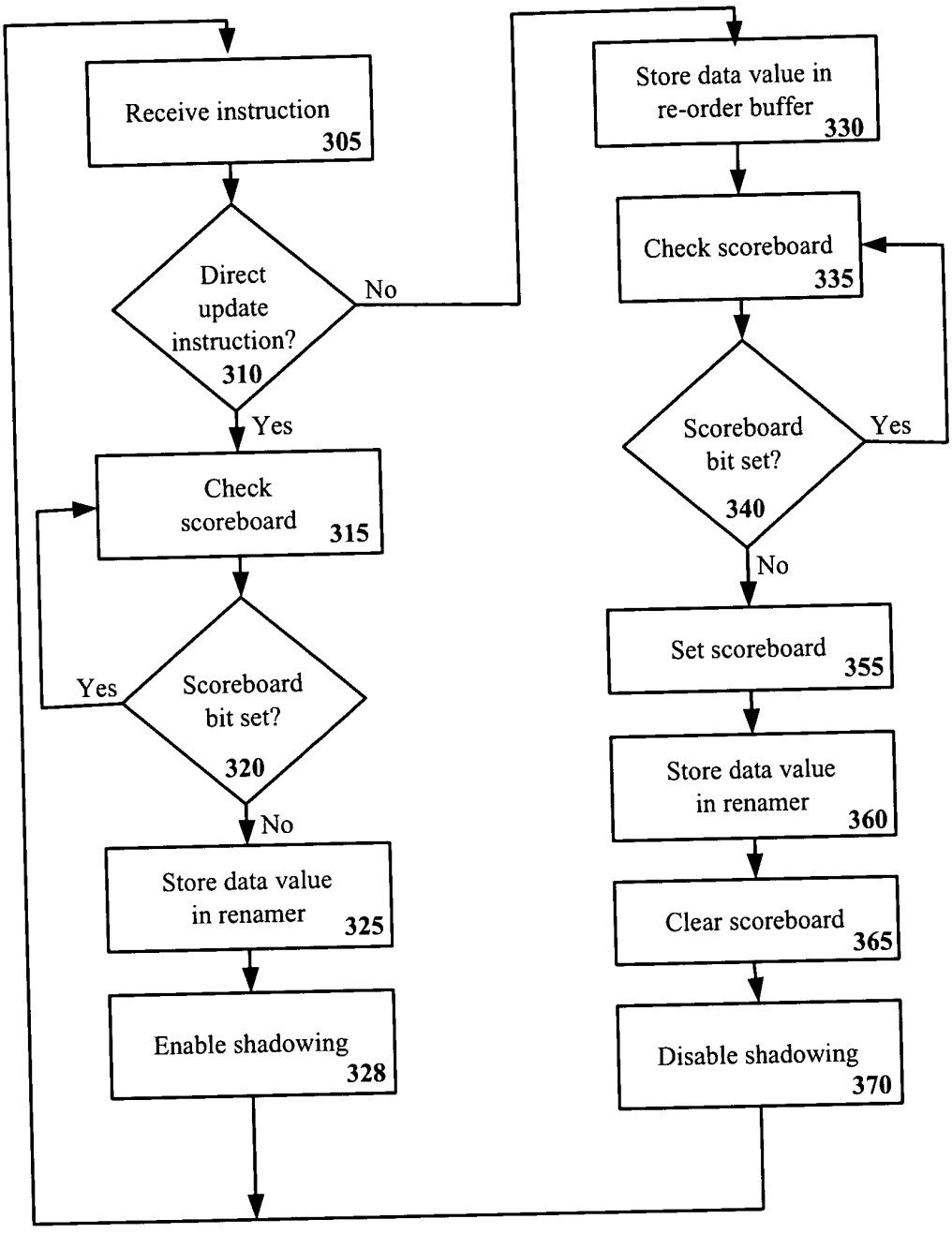
Receive instruction 305
Direct update instruction? 310
No
Yes
Check scoreboard 315
Scoreboard bit set? 320
Yes
No
Store data value in renamer 325
Enable shadowing 328
Store data value in re-order buffer 330
Check scoreboard 335
Scoreboard bit set? 340
Yes
No
Set scoreboard 355
Store data value in renamer 360
Clear scoreboard 365
Disable shadowing 370

Figure 3

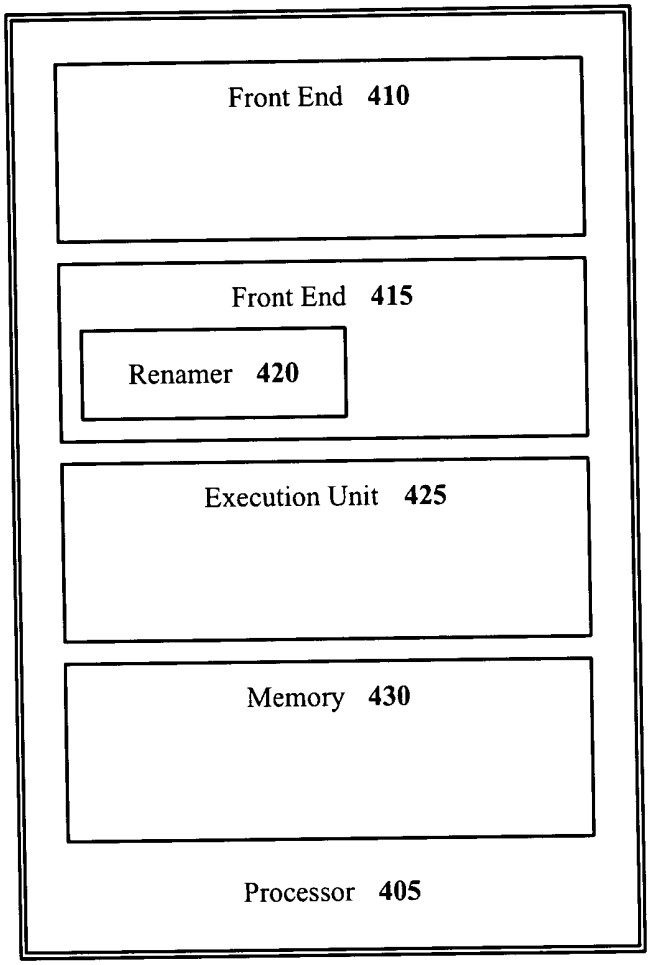
Front End 410
Front End 415
Renamer 420
Execution Unit 425
Memory 430
Processor 405

Figure 4

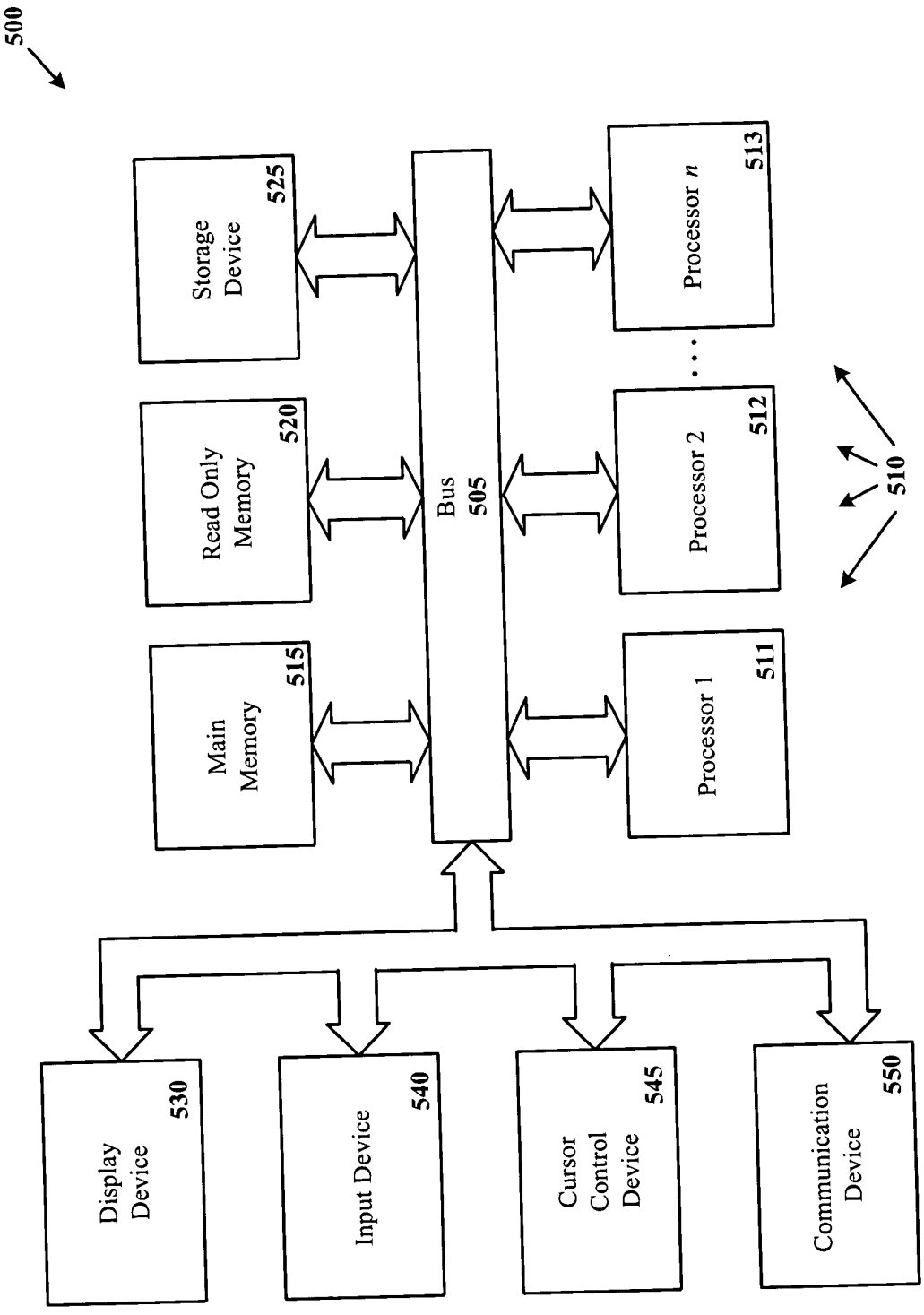
500
Storage Device
525
Read Only Memory
520
Main Memory
515
Bus
505
Processor n
513
Processor 2
512
Processor 1
511
510
Display Device
530
Input Device
540
Cursor Control Device
545
Communication Device
550

Figure 5